mini-BRUTE ROGUE

- SOUNDING RESEARCH VEHICLE
- SCALE-LIKE APPEARANCE
- AUTHENTIC DECOR
- SUPER PERFORMANCE
- EXCELLENT FOR SPORT FLYING

SKILL LEVEL 1

1—Beginner 2—Intermediate 3—Craftsman 4—Advanced 5—Expert

SPECIFICATIONS

Length 11.7'' (29.7 cm.)	Weight 0.75 oz. (21.2 g.)
Body Dia. 0.736'' (18.7 mm.)	Parachute Recovery

RECOMMENDED ENGINES

1/4A3-2T 1/2A3-2T A3-4T

Use 1/4A3-2T for first flights. Engines and launcher not included.

#0818

ESTES INDUSTRIES
PENROSE, COLO. 81240

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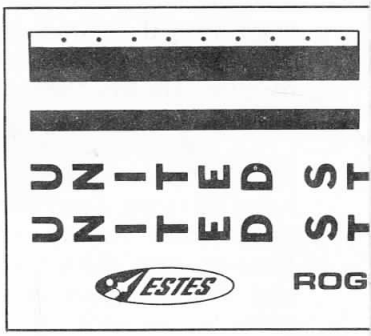
SKILL LEVEL 1



PARTS LIST

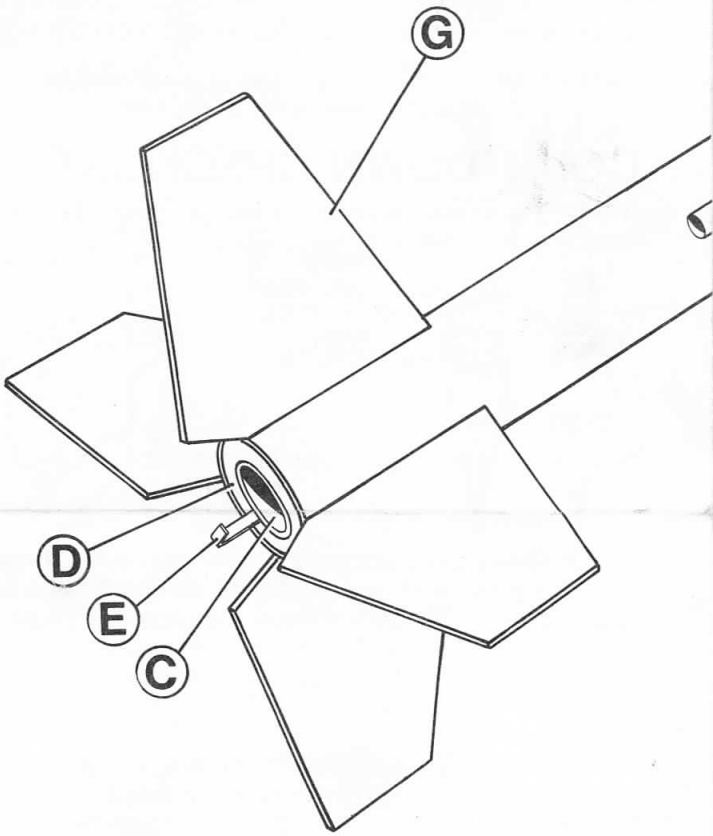
(A)	1	Balsa Nose Cone (type BNC-20R)	70240
(B)	1	Body Tube (type BT-20B)	30320
(C)	1	Engine Mount Tube (type BT-5BJ)	30304
(D)	2	Centering Rings (type AR-520)	30162
(E)	1	Engine Hook (type EH-3)	35026
(F)	1	Launch Lug (type LL-2A)	38175
(G)	1	Die-Cut Fin (type BF-0818)	32272
(H)	1	Decal (type KD-0818)	37318
(I)	1	Shock Cord (type SC-1)	85730
(J)	1	Parachute (type PK-10A)	85562
(K)	1	Strip of 6 Tape Discs (type TD-3F)	38406
(L)	1	72" Shroud Line Cord (type SLT-72)	38237
(M)	1	Screw Eye (type SE-2A)	38252
(N)	1	*Dummy Engine (type EC-8)	35014
(O)	1	*Display Stand Card	09014
(P)	1	Instructions with Shock Cord Mount and Marking Guide	82260A

*Included in kit, but not illustrated.

In addition to the materials above you will need scissors, a pencil, a ruler, a sharp hobby knife or single edge razor blade, sandpaper, masking tape, sanding sealer, and paint or dope. (Enamel based spray paint works best.)

NOTE:

Read the instructions carefully before beginning work on your rocket. Then start construction, following each step in order, checking off each step as it is completed.



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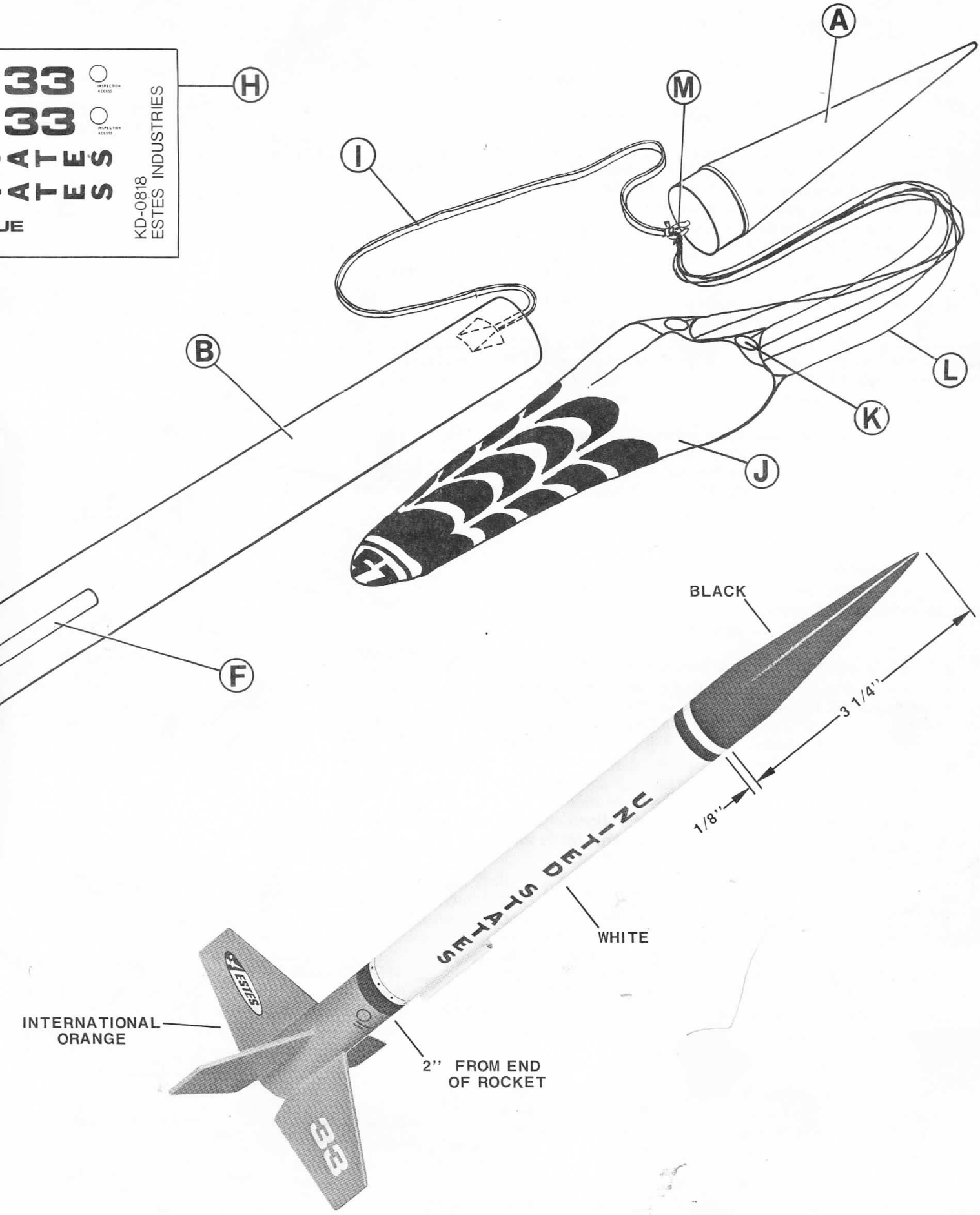
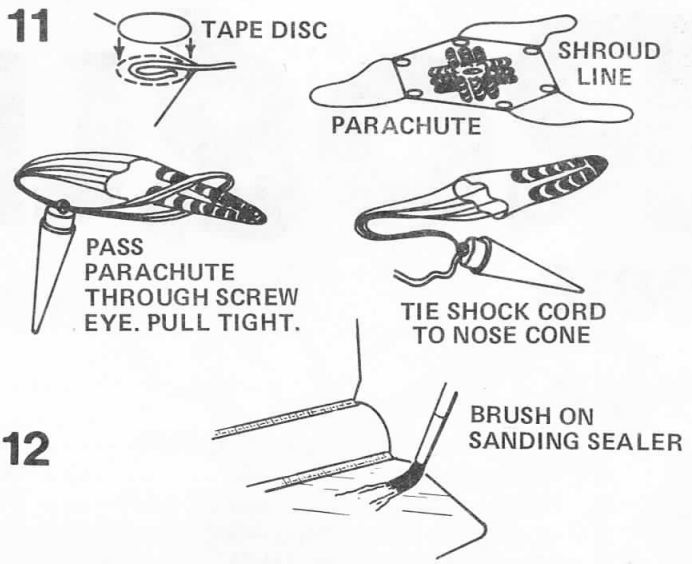

A
M
H
I
B
L
K
J
F
BLACK
3 1/4"
1/8"
WHITE
INTERNATIONAL ORANGE
2" FROM END OF ROCKET
ESTES
33
KD-0818
ESTES INDUSTRIES

☑ **11** Cut out the parachute on its edge lines. Cut three 20 inch lengths of shroud line. Attach line ends to the top of the parachute with tape discs as shown. Pass the shroud line loops through the screw eye at the rear of the nose cone. Pass the parachute through the loop ends and draw line tight against the screw eye. Set the knot with a drop of glue. Tie the free end of the shock cord to the screw eye.

☐ **12** Apply two or more coats of sanding sealer to all balsa surfaces. Sand lightly with extra fine sandpaper between coats. Repeat until all pores are filled and the surfaces smooth. Give the rocket a spray base coat of white and follow with trim colors and decals as shown in the decor layout photo.

☑ **13** Assemble the display stand according to the instructions on the back of the card.



LAUNCHING COMPONENTS

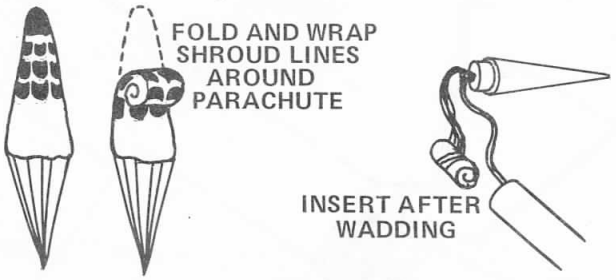
To launch your rocket you will need the following items:
-An Estes model rocket launching system.
-Parachute recovery wadding (Estes Cat. No. 2274).
-Estes 1/4A3-2T, 1/2A3-2T, A3-4T, or A10-3T model rocket engines. Use a 1/4A3-2T engine for the first flight.

Be sure to follow the HIAA-NAR* Model Rocketry Safety Code when carrying out your model rocketry activities.

**HIAA-NAR* — *Hobby Industry Association of America*
National Association of Rocketry

COUNTDOWN CHECKLIST

T-14 Pack two squares of loosely crumpled recovery wadding into body tube.



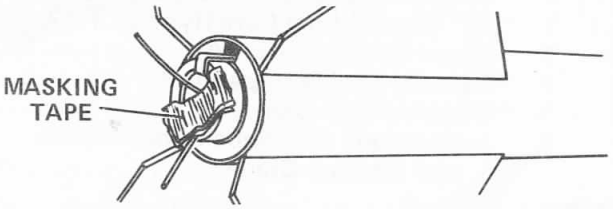
T-13 Fold the parachute into a triangular shape. Roll 'chute tightly as shown and wrap shroud lines around it. Slide 'chute into body above wadding. If 'chute is too large, unroll and repack until it slides easily into rocket. A fit that is too tight may prevent parachute from ejecting properly.

NOTE: DO NOT pack parachute until you are actually ready to launch. For maximum parachute reliability, lightly dust 'chute with ordinary talcum powder, especially in cold weather.

T-12 Pack shock cord neatly into rocket, then slide nose cone into place. Nose cone should separate easily from rocket body tube, but should not be extremely loose. If it is too tight, sand inside of body tube and shoulder of nose cone with extra fine sandpaper.

If nose cone is too loose, add a wrapping of transparent tape or masking tape to the shoulder of the nose block.

T-11 Select an engine and install an igniter as directed in the engine instructions. Engines recommended for use with this rocket are 1/4A3-2T, 1/2A3-2T, A3-4T, and A10-3T. Use a 1/4A3-2T engine for your first flight.



T-10 Insert engine into rocket. Engine hook must latch securely over end of engine.

T-9 Disarm launch panel--remove safety key.

T-8 Place rocket on launch pad, making sure rocket slides freely on launch rod. Clean micro-clips and attach them to igniter leads.

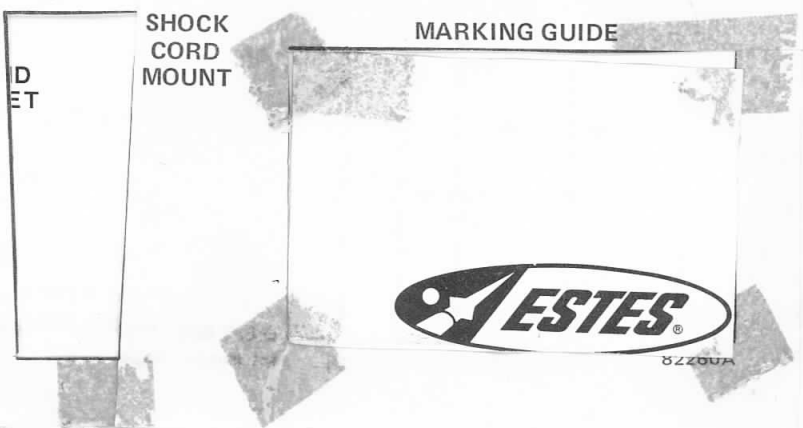
T-7 Clear the launch area, alert recovery crew and trackers. Check for low flying aircraft and unauthorized persons in recovery area.

T-6 Arm launch panel--insert safety key

5 - 4 - 3 - 2 - 1 - LAUNCH!!

MISFIRE PROCEDURE

Occasionally an igniter will heat and burn into two parts without igniting the engine. This is almost always caused by a failure to install it correctly. Disarm launch panel, remove the model, clean igniter residue from nozzle, and install a new igniter. Follow launching procedure again.



ASSEMBLY INSTRUCTIONS

☑ **1** Cut a 1/8" gap in one adapter ring. Glue it to one end of the engine mount tube. Glue the other ring on the other end as shown.

☑ **2** Cut a 1/8" slit in the engine mount tube, directly in line with the gap in the split ring and 1/4" from the other ring. Insert one end of the engine hook into the slit and lay the other end through the gap in the split ring. Wrap a layer of tape around the tube to hold the hook and apply glue to the slit. Set entire unit aside to dry.

☑ **3** Smear glue around the inside of the body tube about 1" from one end. Quickly push the engine mount tube in until the rear ring is even with the end of the body tube. Do not pause during this operation, or the glue may stick with the mount in wrong place.

☑ **4** Cut out marking guide from instructions near Misfire Procedure, wrap around the body tube, and mark at each arrow point. Remove and connect the matching front and rear marks with straight lines. Extend the launch lug line up the body about 4 inches.

☑ **5** Fine-sand the balsa sheet, then carefully remove the die-cut fins from the sheet. Free edges with a sharp hobby knife. Sand edges as shown.

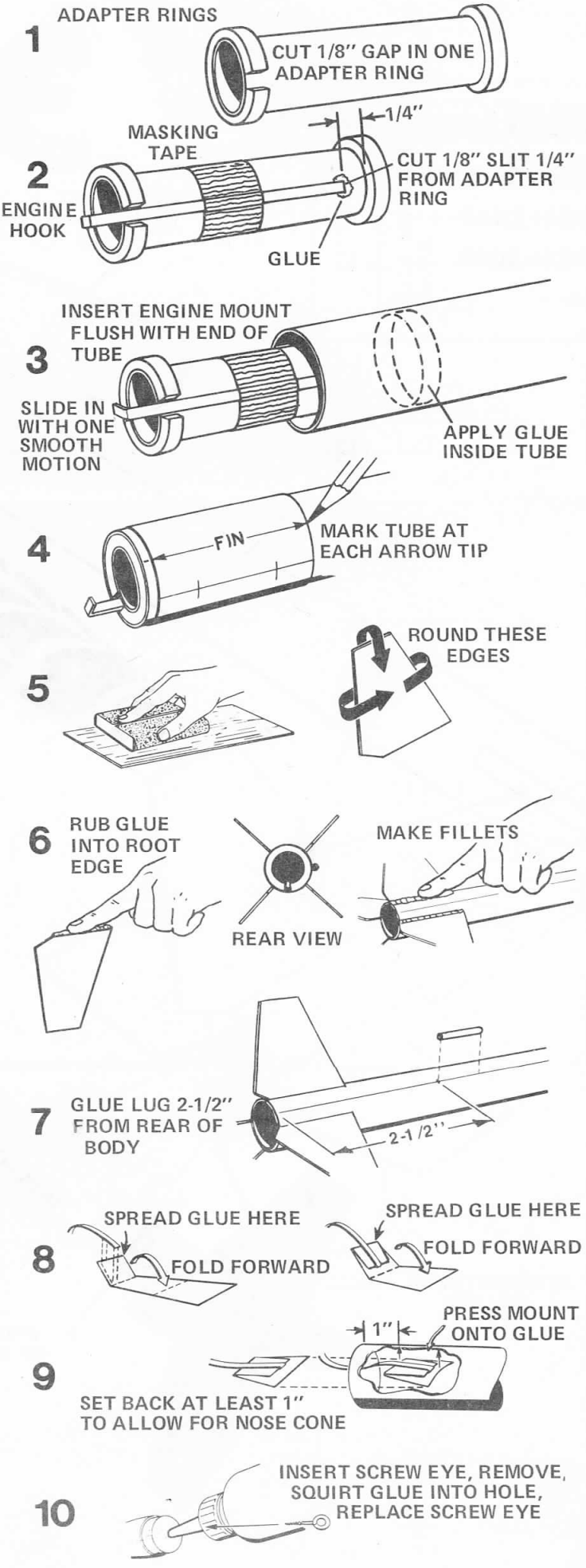
☑ **6** Rub a priming coat of glue into the root edge of each fin and allow to dry. Glue the fins to the body tube directly beside the alignment lines with the rear of the root edge even with the rear of the body tube. Align the fins so they project straight away from the body. After the joint is completely dry, apply glue fillets.

☑ **7** Glue the launch lug to the body on the alignment line as shown, 2-1/2" from the rear of the body tube. Make sure the lug is aligned parallel to the body.

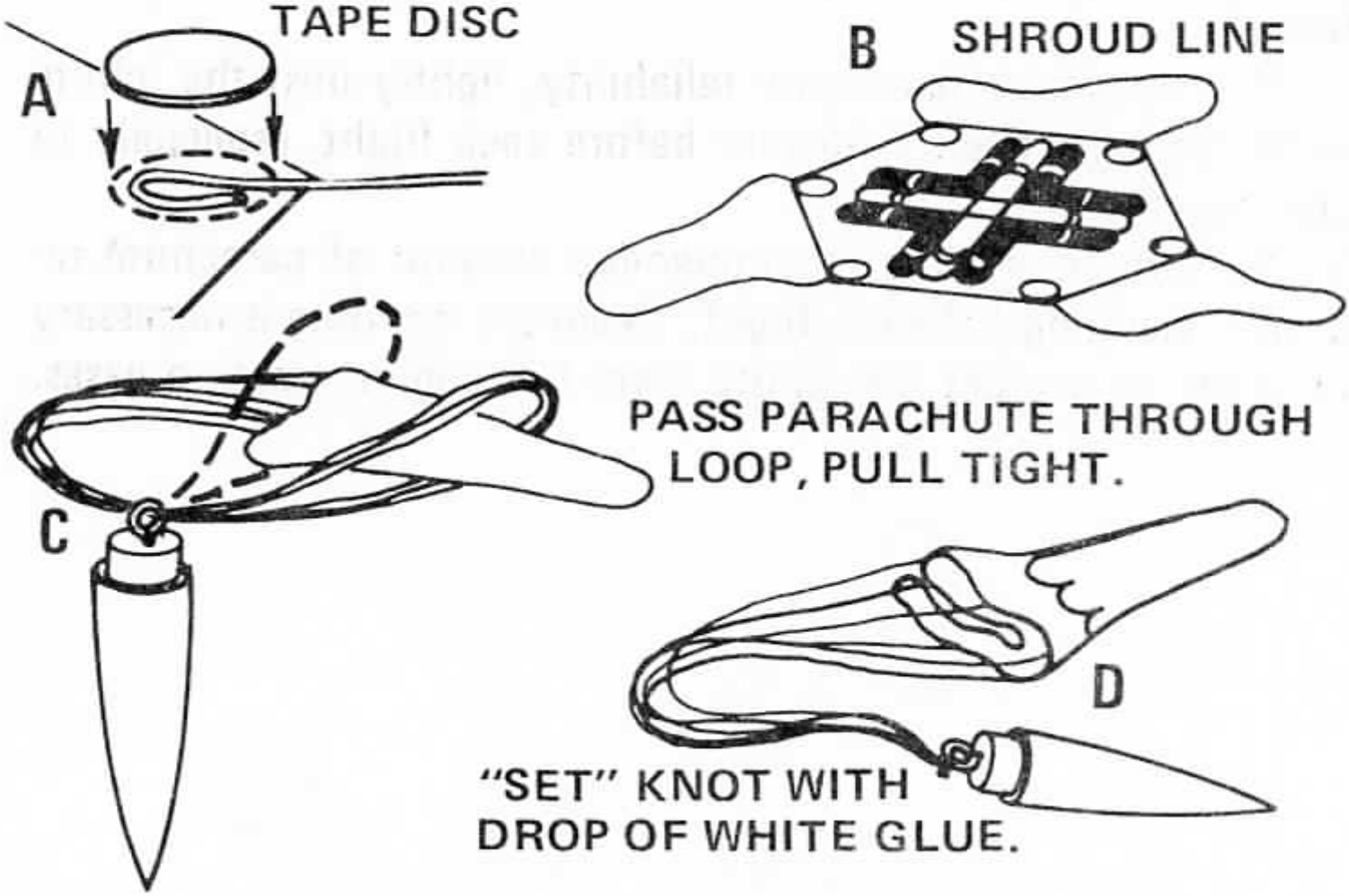
☑ **8** Cut out the shock cord mount from instructions near Misfire Procedure. Pre-fold it on the dotted lines. Apply glue to section 1 and lay the shock cord end onto the glue. Fold this first section over. Spread glue over the back of the first section and the exposed part of section 2. Lay the shock cord as shown and fold over again. Clamp the unit together with your fingers until the glue sets.

☑ **9** Apply glue to the inside of the body tube at the front over an area about 1" to 1-3/4" from the end. The glued area should be the same size as the shock cord mount. Press the mount into the glue and hold it until the glue sets.

☑ **10** Insert the screw eye into the base of the nose cone. Remove and squirt a small amount of glue into the hole. Re-insert the screw eye.



10" PARACHUTE ASSEMBLY INSTRUCTIONS



Cut out the plastic parachute on its edge lines. Cut three 20 inch lengths of shroud line thread. Attach line ends to the top (printed side) of the parachute with tape discs as illustrated. Be sure to rub disc firmly into place over the shroud line.

Pass the shroud line loops through the eyelet, or screw eye at the rear of the nose cone. Pass the 'chute through the loop ends as shown and draw the lines tight against the screw eye. "Set" the knot with a drop of white glue.

FOLLOW THESE SUGGESTIONS FOR BEST RESULTS:

1. Do not pack parachute until you are actually ready to launch.
2. For maximum parachute reliability, lightly dust the 'chute with ordinary talcum powder before each flight, especially in cold weather.
3. Be sure to use the recommended amount of parachute recovery wadding for each flight. Recovery wadding is necessary in order to protect the 'chute from hot engine ejection gases.

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ESTES INDUSTRIES, PENROSE, COLORADO 81240

PARACHUTE PN 38201

ASSEMBLY INSTRUCTIONS

CUT OUT CAREFULLY ALONG DOTTED LINES

1 CUT OUT PARACHUTE CAREFULLY ALONG DOTTED LINES. CUT THREE 20" LONG SHROUD LINES.

FIG. 1

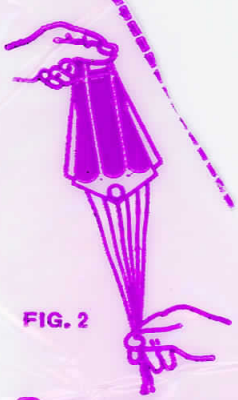

FIG. 2

2 CENTER END OF SHROUD LINE OVER CIRCLE AT PARACHUTE CORNER. SECURE LINE WITH TAPE DISC AS SHOWN IN FIGURE 1. PRESS DISC FIRMLY INTO PLACE. ATTACH REMAINING LINES TO ADJACENT CORNERS OF PARACHUTE.

3 HOLD PARACHUTE AT ITS CENTER, PRINTED SIDE OUT. PULL LINES TOGETHER AND EVEN UP ENDS AS IN FIGURE 2.

4 TIE PARACHUTE LINES TO RECOVERY ATTACHMENT LOCATION AS SPECIFIED IN KIT ASSEMBLY INSTRUCTIONS.

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CUT OUT CAREFULLY ALONG DOTTED

DISPLAY FLAG-CUT OUT
AND TAPE TO CORD OR DOWEL

CUT OUT CAREFULLY ALONG DOT

DISPLAY FLAG-CUT OUT
AND TAPE TO CORD OR DOWEL